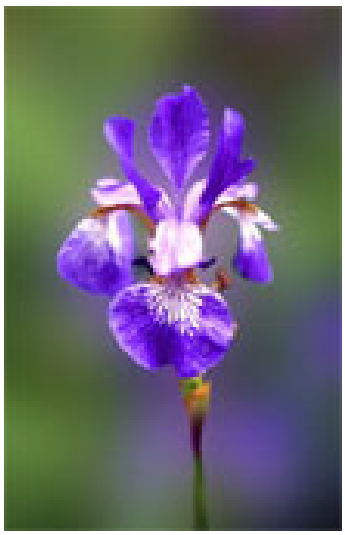
Fetal and Infant Mortality Review of Davidson County



Partnering to Give Nashville's Infants a Chance to Bloom

Program Participants

Case Review Team Members

Cheryl Benion, BA MS
Gail Bright, RN, CPN
Deborah Cogswell, MSN, RN
Elizabeth Cook, BSN, RN
Sharron Denman, LMSW
Nancy Donoho, MSN, RN
Rebecca Escobar, RN
Cherie Hackney, LAPSW
Amanda Holley, MPH
Joan R Jenkins
Melanie Lutenbacher, MSN, APRN, PhD, FAAN
Amy Moseley, MA
Kristen Rector, LAPSW
Gloria Richard-Davis, MD, FACOG
Tashia Richards, BA
Tom D Sharp, BA
Carla Y Thomas, BS
Sandra Thomas-Trudo, MD, MS
Stephanie H Walker, MD, MPH
William Walsh, MD
Jennifer Weatherly, RN, BSN
Kimberlee Wyche-Etheridge, MD, MPH

Community Action Team Members

Leah Alexander, PhD
Brenda Barker, MEd
Vicki Beaver, RN, MSN
Cheryl Benion, BA, MSN
Deborah Bouressa, MSN
Nicole Brooks
Luvenia Butler, MSP
Susan Campbell, MD
Elizabeth Cook, BSN, RN
Brittany Corlew, MA, LPC
Tamara Currin, MS, MCHES
Nancy Donoho, RN, MSN
Susan Drummond, RN, MSN
Ruby Dunlap, EdD, MSN, APRNBC
Tonya Elkins, LAPSW, MSW
Amy Eller, LPC-MHSP
Marlena Elrod, RN, MSN
Deniece Ferguson, MS
Sara Fox, RN, FNP
Delphine Gentry, RN
Dianne Gramann, LAPSW, LMSW, ACSW
Cathy Jo Graves, RN, CM
Amanda Holley, MPH
Georgianna Hooker, BS, MPA
Nancy Huguley, BS, MEd, RN
JoAnne Hunnicutt, LPN, HROB, CM
Joan R Jenkins
Yvonne A Joosten, MPH
Sandra Kaylor, BS, RN
Cortney Lawrence, BS
Tina Lester, RN, MSN
Adele Lewis, MD
Jessica Loggins, MPH
Cheryl Major, RNC-NIC, BSN
Ashleigh Mason
J Nikki McKoy, MPH
Amy Moseley, MA
Monica Murphy, MPH
Jessica Owens, BSN, RN
Sylvia Page
Denise Pepin, LCSW
Theodora Pinnock, MD
Anne Pruett, MSSW, LMSW
Kristen Rector, LAPSW
Tom D Sharp, BA
Heather Snell, MPH
Sylvia Stamper, LBSW
Sandra Thomas-Trudo, MD, MS
Angie Thompson, MSP
Lesia D Walker, MPH
Jennifer Weatherly, RN, BSN
Dahna Wright, RN, BSN
Kimberlee Wyche-Etheridge, MD, MPH
Beth Youngblood, RN, WHNP-BC, EdD, CNE

Table of Contents

Acknowledgements

As we enter the fourth year of making a difference for the mothers, children, and families of Davidson County, the FIMR program would like to acknowledge and extend thanks to the following persons who have dedicated long hours to the initiation and ongoing success of the program:

William Paul, MD, MPH, for his understanding and departmental support to the FIMR Program and staff.

Kimberlee Wyche-Etheridge, MD, MPH, for her vision and guidance in improving the quality of life for babies.

The Maternal and Child Health Bureau of the Tennessee Department of Health for the support of the FIMR programs statewide.

The Case Review Team members for meeting monthly to identify the trends and gaps in service and recommend actions.

The Community Action Team members for implementing strategic actions in the community to improve the lives of our babies.

Lastly, a salute to ***the staff of the FIMR Program*** who consistently work above and beyond for the babies of Davidson County.

Executive Summary

This report summarizes the findings, recommendations, and activities of the Davidson County Fetal and Infant Mortality Review (FIMR) program from September 1, 2009 through June 30, 2012. During this period, the FIMR team reviewed 159 fetal and infant deaths among Davidson County residents.

These cases were presented to the multi-disciplinary Case Review Team (CRT). Following in-depth discussions of issues identified through case reviews, recommendations were developed around twelve areas of need:

Advocacy, policy, and law	Family planning	Medical and social systems	Prenatal care
Domestic abuse	FIMR process	Mental health	Post-loss care
Environmental issues	Infant safety	Pre/Interconception care	Substance abuse

The findings and recommendations presented here provide an opportunity for individuals, community members, health and social service providers, and policy makers to work together to improve systems of care for women and infants in Davidson County.

Introduction

What is the Fetal Infant Mortality Review (FIMR)?

The Fetal and Infant Mortality Review (FIMR) program is designed to change the laws, policies, practices, and systems in Davidson County that impact women, children and families in order to prevent fetal and infant deaths. A fetal death, or stillborn, is defined as a fetus that dies before being born, and an infant death is defined as the death of a child prior to his or her first birthday.

How does FIMR operate?

The FIMR process includes four steps:

Information is collected by a public health nurse from all available sources. These sources can include medical records, medical examiner's information, and social service notes. Whenever possible, a trained health professional conducts maternal interviews to supplement routine medical record data with a personal perspective, and provides referrals to resources for parents. Data are then stripped of all identifiers, summarized, and provided to a Case Review Team.

Due to the high numbers of fetal and infant deaths in Davidson County, and the intensive review process of FIMR, only deaths which meet any of the following criteria are included for review: a) fetal deaths that weigh at least 500 grams (1 pound, 1 ounce), or are at least 24 weeks gestation, b) infant deaths that are at least 20 weeks gestation and weigh less than 1500 grams (3 pounds, 3 ounces), and c) infants whose cause of death is SUID (Sudden Unexpected Infant Death), SIDS (Sudden Infant Death Syndrome), or undetermined and have no police involvement.

The Case Review Team (CRT) includes health, social service, and other experts from community organizations such as hospitals, social services, public health, and county government. The CRT reviews each case to identify factors that increase the occurrence of poor birth outcomes. The team then makes recommendations to the Community Action Team (CAT).

The Community Action Team (CAT) includes a diverse group of community leaders who take the recommendations from the CRT, prioritize them and identify people and organizations within the community that can assist in getting the changes implemented. The CAT works to build partnerships and create work plans designed to implement the recommendations of the CRT.

Evaluation provides a constant stream of feedback. Through analysis of the feedback, the FIMR process can implement improvements, and determine whether or not the recommendations which are implemented produced the desired outcome.

Davidson County FIMR Activities

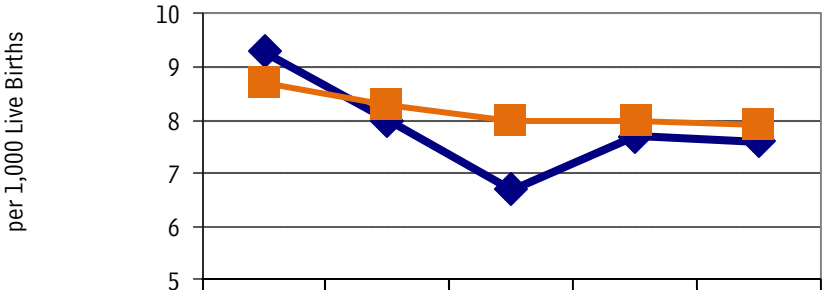
The Metro Public Health Department (MPHD) is the lead agency of the FIMR process. This report summarizes and presents the findings and activities of this program since its inception in September 2009, and includes all reviewed cases through June of 2012.

The Data

Fetal and Infant Mortality in Davidson County

Infant mortality has long been viewed as a sentinel event to measure a community's health and its overall social and economic well-being. An infant death is defined as the death of a child before his or her first birthday.

Figure 1. Infant Mortality Rates, Davidson County, TN 2006-2010

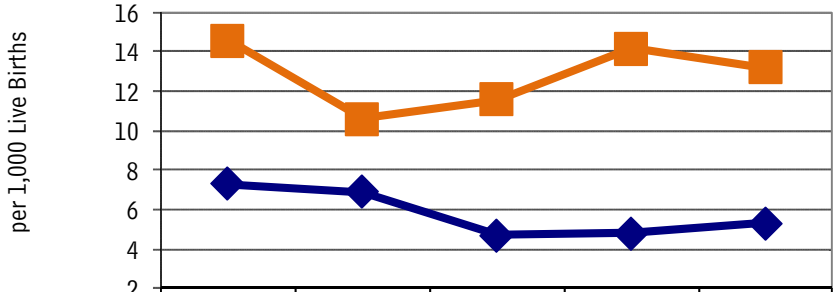


	2006	2007	2008	2009	2010
Davidson	9.3	8.0	6.7	7.7	7.6
Tennessee	8.7	8.3	8.0	8.0	7.9

The Davidson County infant mortality rate is comparable to that for the State of Tennessee. Infant mortality rates for 2006 to 2010 are illustrated in Figure 1. In 2010, the rate in Davidson County was 7.6 infant deaths per 1,000 live births. This rate was slightly lower than the State rate of 7.9, and 23.8% higher than preliminary national rate of 6.1.

The burden of infant mortality is not distributed evenly across the population of the county. Black infants born in Davidson County are 2.5 times more likely to die before reaching their first birthday than White infants (see Figure 2). Compared to 2009, the Black infant mortality rate decreased 7.6% while the White rate increased 10.4%.

Figure 2. Infant Mortality Rates By Race, Davidson County, TN 2006-2010

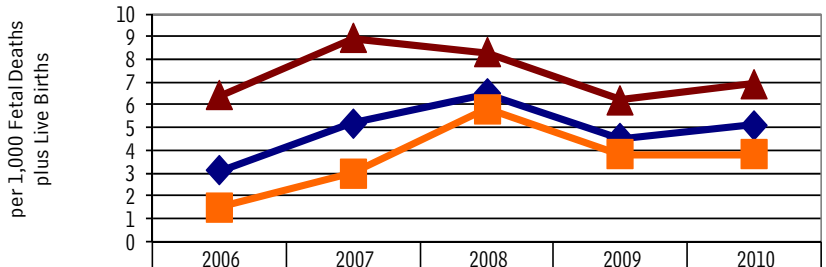


	2006	2007	2008	2009	2010
White	7.3	6.9	4.7	4.8	5.3
Black	14.6	10.6	11.6	14.2	13.2

An important facet of FIMR is that it examines fetal deaths in addition to infant deaths. This allows for the review of factors that impact a woman throughout her pregnancy and beyond, and expands the focus of the program.

Fetal mortality, commonly referred to as stillborns, is defined as the expulsion of a product of conception that does not show evidence of life. In Tennessee, fetal deaths greater than 500 grams (1 pound, 1 ounce) are reported. If the birth weight is unknown, then the fetal death must be at least 22 weeks gestation.

Figure 3. Fetal Mortality Rates By Race, Davidson County, TN 2006-2010



	2006	2007	2008	2009	2010
Total	3.1	5.2	6.5	4.5	5.1
White	1.5	3.0	5.8	3.8	3.8
Black	6.4	8.9	8.3	6.2	6.9

As of July 1, 2010, the State of Tennessee changed the reporting requirements for fetal deaths to greater than 350 grams (12.3 ounces), and in the absence of weight, 20 weeks gestation (House Bill 3286). This will affect the fetal mortality rates we report starting in 2010.

Disparities also exist for fetal mortality; black fetuses are 1.8 times more likely to die than white fetuses (Figure 3).

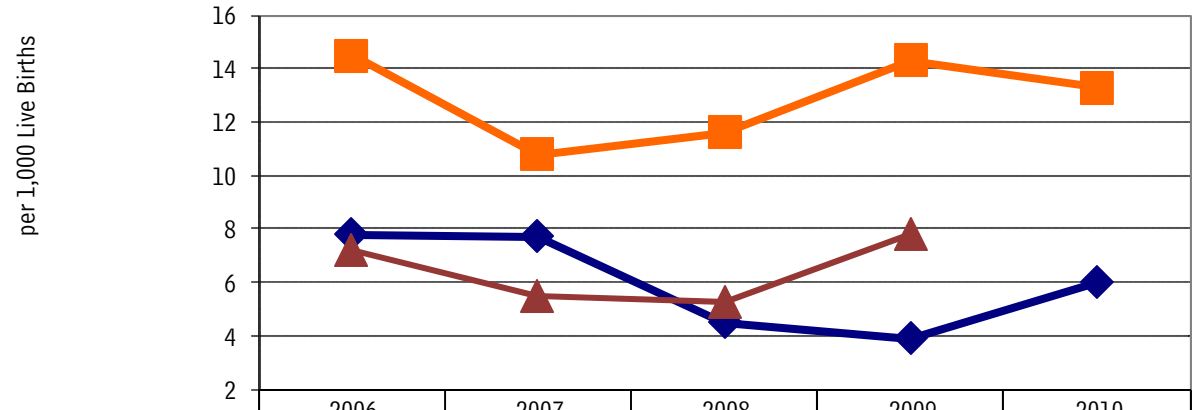
What about Hispanics?

The 2010 census revealed that 9.8% of the population in Davidson County is Hispanic; additionally, 16.7% of all live births in 2010 were to Hispanic mothers, compared to 49.1% to non-Hispanic white mothers, and 29.9% to non-Hispanic black mothers.

Infant mortality by race and ethnicity is illustrated in Figure 4. The trend line for Hispanics appears to have great shifts, ranging from a high of 7.8 in 2009 to a low of 5.3 in 2008, but this is more a factor of the low numbers of infant deaths among this population than actual fluctuations in underlying infant mortality.

A similar trend is noted when examining fetal mortality by race and ethnicity. With the exception of 2008, the number of Hispanic fetal deaths is consistently less than 10, meaning

Figure 4. Infant Mortality Rates By Race and Ethnicity, Davidson County,TN 2006-2010



	2006	2007	2008	2009	2010
White NonHispanic	7.8	7.7	4.5	3.9	6.0
Black NonHispanic	14.5	10.8	11.6	14.3	13.3
Hispanic	7.2	5.5	5.3	7.8	**

**Rates are suppressed when the number of events <10.

the rates are unstable. For this reason, fetal mortality for this population is not included in this report.

Healthy People 2020

Healthy People 2020 is a national effort that sets goals for a wide assortment of health indicators (see Table 1). The goal for infant mortality is set at 6.0 deaths per 1,000 live births (Objective MICH-1.3). The Davidson County 2010 rate is 26.7% higher than the goal. Additionally, Davidson County is 12.2% higher than the goal for neonatal mortality rates, and 50% higher than the goal for postneonatal mortality rates.

The Healthy People 2020 goal for fetal mortality is 5.6 fetal deaths per 1,000 live births plus fetal deaths (Objective MICH-1). Nashville has met the goal overall, but the non-Hispanic black rate is 25% higher than the objective.

In 2010, Davidson County failed to meet the Healthy People 2020 goals for percent of mothers who didn't smoke during pregnancy (Goal: 98.6%, 2010: 89.4%), and the percent of mothers who enter prenatal care in the first three months of pregnancy (Goal: 77.9%, 2010: 56.7%).

Table 1. Selected Perinatal Indicators for Davidson County, TN 2010 and Associated Healthy People 2020 Goals					
Indicator	*Total*	*NH White*	*NH Black*	*Hispanic*	*HP2020*
Number of Births	9557	4690	2857	1600	N/A
Maternal Socio-demographics					
% mothers <20 yrs.	8.3	4.5	14.3	10.4	N/A
% mothers with <12 years education	23.6	9.9	22.1	66.6	N/A
% mothers who are unmarried	45.0	25.9	72.3	58.8	N/A
% households with income < $25,000	37.2	22.6	51.0	58.4	N/A
% mothers with 4+ births	9.5	6.8	13.9	10.2	N/A
% mothers who refrained from smoking during pregnancy	89.4	86.8	88.4	97.5	98.6
Prenatal Care Utilization					
% with 1st trimester prenatal care	56.7	65.8	52.9	39.8	77.9
% with 3rd trimester or no prenatal care	5.5	3.9	5.7	8.5	N/A
Live Birth outcomes					
% births with multiple gestation	3.1	3.2	3.5	1.9	N/A
% preterm births (<37 weeks)	8.5	7.3	11.7	6.6	11.4
% low birth weight (<2500 grams)	8.7	7.0	12.9	5.8	7.8
% very low birth weight (<1500 grams)	1.4	1.0	2.4	0.8	1.4
Mortality Rates					
Infant Mortality Rate per 1,000 Live Births	7.6	6.0	13.3	**	6.0
Neonatal (up to 28 days)	4.6	3.8	7.4	**	4.1
Postneonatal (28 days to 1 year)	3.0	2.1	6.0	**	2.0
Fetal Mortality Rate per 1,000 Live Births plus Fetal Deaths	5.1	4.2	7.0	**	5.6

N/A No Healthy People 2020 Objective available.

**Rates are suppressed when the number of events is < 10.

Davidson County has met the goal for % of very low birth weight births (Goal: 1.4%, 2010: 1.4%), and percent of preterm births (Goal: 11.4%, 2010: 8.5%), but has failed to meet the goal for percent of low birth weight births (Goal: 7.8%, 2010: 8.7%).

Demographic Profile

In Davidson County, the majority of births are to women 20 years and older for every ethnic group. Non-Hispanic black mothers tend to have higher numbers of prior births, and receive limited prenatal healthcare compared to their non-Hispanic white counterparts (see Table 1). They are also more likely to have a low birth weight (<2500 grams, 5 pounds 5 ounces), very low birth weight (<1500 grams, 3 pounds 3 ounces), or preterm (<37 weeks gestation) infant than non-Hispanic white mothers.

Hispanic mothers are more likely to have less than a high school education, have an income less than $25,000 a year, and either receive no prenatal care, or enter prenatal care during the third trimester than non-Hispanic whites or non-Hispanic blacks. Interestingly, Hispanics tend

to have better birth outcomes than non-Hispanic whites in Davidson County. This illustrates the complex network of factors that serve to perpetuate racial and ethnic disparities in pregnancy outcomes.

Perinatal Periods of Risk Analysis

Davidson County became a member of the Perinatal Periods of Risk (PPOR) Practice Collaborative in November 2000 to enhance existing efforts to reduce infant mortality. The PPOR approach was developed by Dr. Brian McCarthy and others from the World Health Organization Perinatal Collaborative Center at the Centers for Disease Control.

PPOR is a simple population-based approach that examines the distribution of fetal and infant deaths by birth weight and age at death to identify gaps between population groups and specify areas for possible interventions. The approach is designed to expand traditional infant mortality analyses, and allow a community to understand the factors that contribute to its fetal and infant mortality.

Figure 5. The Feto-Infant Mortality Map With Suggested Interventions

	FETAL	NEONATAL	POSTNEONATAL
500-1499g	MATERNAL HEALTH/PREMATURITY *Preconceptional Health* *Health Behaviors* *Perinatal Care*		
1500+g	MATERNAL CARE *Prenatal Care* *Referral System* *High Risk OB Care*	NEWBORN CARE *Perinatal Management* *Referral System* *Specialty Care*	INFANT HEALTH *Sleep Position* *Breast Feeding* *Injury Prevention*

Grouping fetal and infant deaths by birth weight and age at death, produces the matrix, called the Feto-Infant Mortality Map, seen in Figure 5. Age at death is grouped into fetal, neonatal, and postneonatal deaths. Birth weight is categorized as 500 to 1499 grams (1 pound,1 ounce to 3 pounds, 3 ounces; very low birth weight; VLBW), and 1500 grams and greater (3 pounds and 3 ounces; higher birth weight; HBW).

The sections are grouped into categories which are designed to suggest preventative actions. The maternal health and prematurity category, for example, suggests a community should focus on issues such as preconception health, unintended pregnancy, smoking and other substance abuse. Issues related to maternal care may need a preventative focus on early and continuous prenatal care, referral of high-risk pregnancies, and good medical management of underlying conditions. For newborn care, the focus may be on advanced neonatal care and the treatment of birth defects. Lastly, to address infant health issues, communities may need to focus on Sudden Infant Death Syndrome (SIDS) prevention activities such as sleep position education, or injury prevention. The PPOR map clearly illustrates that much of the work needed to reduce infant mortality occurs before a woman is pregnant, or before delivery.

In Davidson County, analysis was conducted on 269 fetal and infant deaths occurring during the years 2007 through 2009 (excluding multiple births). Following the PPOR protocol, fetal deaths 500 grams (1 pound 1 ounces) and more, and at least 24 weeks gestation were included, as were infant deaths weighing at least 500 grams. Figure 6 illustrates the group-specific fetal-infant mortality rates per 1,000 live births plus fetal deaths; overall and for non-Hispanic

Figure 6. Davidson County "Map" of Fetal and Infant Deaths by Race and Ethnicity, 2007-2009

	FETAL	NEONATAL	POSTNEONATAL	
500 - 1499 grams	**Maternal Health/Prematurity** TOTAL (T) NHWHITE (NHW) NHBLACK (NHB) HISPANIC (H) Rate 3.5 1.9 6.5 2.2			Total: 268 Feto-Infant Deaths
1500+ grams	**Maternal Care** T NHW NHB H 2.9 2.1 4.2 2.9	**Newborn Care** T NHW NHB H 0.9 0.9 0.9 *	**Infant Health** T NHW NHB H 2.0 1.2 3.4 *	Rate: 9.3 deaths per 1,000 fetal deaths + live births

Source: MPHD, 2012, Singletons. Rates per 1,000 live births plus fetal deaths.
**Rates are not calculated when the number of events is <10.*

whites, non-Hispanic blacks, and Hispanics.

The total fetal-infant mortality rate for non-Hispanic blacks was 14.9 compared to 6.4 for non-Hispanic whites, a greater than two-fold difference. The total fetal-infant mortality rate for

Hispanics was 7.5, a rate that was 1.2 times higher than that of non-Hispanic whites. Disparities are plainly evident in each category of the map with the exception of Newborn Care. The largest contributor to mortality was maternal health and prematurity, representing very low birth weight infants. The second highest category was maternal care, representing higher birth weight fetal deaths.

Data From FIMR Reviews

Since its inception in 2009 through June 30, 2012, the Davidson County FIMR team has reviewed 159 fetal and infant deaths. The team recognizes that without several more staff members, it is impossible to conduct the intensive FIMR review of all fetal and infant deaths in Davidson County. For this reason, the team uses the PPOR model to determine which cases are reviewed. This technique ensures that the most prominent areas of fetal and infant mortality are evaluated. The Davidson County FIMR team reviews resident fetal and infant deaths that meet the following criteria:

- Fetal deaths that weigh 500 grams (1 pound and 1 ounce) and more, or are 24 weeks and greater gestation (Maternal Health and Prematurity, Maternal Care).
- Infant deaths that are 20 weeks and greater gestation and weigh less than 1500 grams (3 pounds 3 ounces) (Maternal Health and Prematurity)
- Infants whose cause of death is SUID (Sudden Unexpected Infant Death), SIDS (Sudden Infant Death Syndrome), or Undetermined and have no police involvement (Infant Health).

As the maternal interview is one of the cornerstone practices of a Fetal and Infant Mortality Review program, Table 2 shows the demographic characteristics of the cohort for those mothers who participated in an interview compared to those mothers who did not. The characteristics for all live births in Davidson County during 2010 are also presented for comparison.

Maternal interviews were conducted for 42% of the cohort. Mothers consenting to interviews tended to be older and better educated than those who were not interviewed. Non-Hispanic black mothers comprised the majority of those giving interviews, though it is interesting to note that the majority of Asians in the cohort were interviewed, as were half of the Arabic mothers. Slightly less than half of Hispanic mothers were interviewed.

Table 2. Demographic Characteristics of the Interviewed and Non-Interviewed FIMR Cohort, and All Live Births, 2010						
	FIMR Cohort				All Live Births	
	Interview (n=67)		No Interview (n=92)		Davidson County (n=9557)	
	n	%	n	%	n	%
Maternal Age						
15-19 years	7	10.4	14	15.2	795	8.3
20-29 years	27	40.3	42	45.7	4970	52.0
30-39 years	29	43.3	30	32.6	3542	37.1
40+ years	4	6.0	5	5.4	247	2.6
Race						
Arabic	3	4.5	6	6.5	*	*
Asian	4	6.0	2	2.2	340	3.6
Black	36	53.7	45	48.9	2883	30.2
White	23	34.3	35	38.0	6247	65.4
Ethnicity						
Hispanic	5	7.5	12	13.0	1600	16.7
NonHispanic	62	92.5	78	84.8	7945	83.1
Race/Ethnicity						
White NonHispanic	24	35.8	28	30.4	4690	49.1
Black NonHispanic	33	49.3	45	48.9	2857	29.9
Hispanic	5	7.5	12	13.0	1600	16.7
Education						
Less than High School	8	11.9	23	25.0	2251	23.6
High School Graduate	18	26.9	25	27.2	1916	20.0
Some College	10	14.9	9	9.8	1813	19.0
College Degree	9	13.4	5	5.4	2411	25.2
Graduate Degree	5	7.5	3	3.3	1106	11.6
Unknown	17	25.4	26	28.3	60	0.6

*Category not available in racial designations in vital records.

The FIMR Cohort

One of the major responsibilities of the Case Review Team is to listen to the stories of the mothers who have suffered a loss. What this process has revealed is that many of the women experiencing losses are dealing with a variety of life stressors, prior to and during their pregnancy.

Each of the following tables presents data for a selected group of characteristics for the entire FIMR cohort, a reference and a non-reference group. Following PPOR protocols, the group in Davidson County that typically has the best outcomes was used for the reference group: non-Hispanic white mothers, greater than 19 years of age, with 12 or more years of education. An asterix (*) in any cell indicates that the number was less than 5 and was suppressed.

It is important to remember that much of the valuable information gleaned from case reviews is not quantifiable. An intensive review of the circumstances surrounding the death of an infant or fetus can often illustrate systems issues that would never be detected through quantitative analysis. For this reason, each of the following sections presents both quantitative data and insights from the review team, as well as a few pertinent team recommendations. The complete list of recommendations can be found in Appendix A.

A. Economic Challenges

Table 3 provides a snapshot of the economic realities of mothers who have experienced a fetal or infant loss, as compared to the reference group. Mothers in the reference group generally had better access to financial resources than mothers not in the reference group. A greater proportion of mothers in the reference group were employed full-time (Ref: 47.1%; Non-ref: 29.6%), and received financial assistance from the father of the baby (Ref: 44.1%; Non-ref: 29.6%). Those in the non-reference group used more public financial services than those in the reference group.

Transportation and housing also present challenges. Fewer mothers in the non-reference group own a home (Ref: 41.2%; Non-ref: 8.0%), or car (Ref: 61.8%; Non-ref: 41.6%) than mothers in the reference group. Additionally, 40% fewer mothers in the non-reference group live with the father of the baby than mothers in the reference group.

More than half of the women in the reference group had private insurance to cover both prenatal care and labor and delivery expenses, compared to less than 25% of those in the non-reference group. A little less than 60% of mothers in the non-reference group used TennCare to pay for those medical services.

Review Team Notes

Financial hardship as a general category fails to capture the very real situations pregnant women find themselves facing. Discrimination against pregnant women in the workplace has

Table 3. Economic Challenges of the FIMR Cohort, Reference Group, and Non-Reference Groups						
	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Maternal Employment						
None	61	38.4	11	32.4	50	40.0
Full-time	53	33.3	16	47.1	37	29.6
Part-time	15	9.4	*	*	13	10.4
No info	30	18.9	5	14.7	25	20.0
Housing						
Rent	63	39.6	9	26.5	54	43.2
Own	24	15.1	14	41.2	10	8.0
Incarcerated Dad	7	4.4	*	*	6	4.8
Live with Father of Baby	61	38.4	19	55.9	42	33.6
Live with Relatives	45	28.3	*	*	43	34.4
Unstable Housing	5	3.1	*	*	*	*
Environmental Exposure						
Maternal 2nd Hand Smoke	36	22.6	10	29.4	26	20.8
Maternal Occupational Hazards	9	5.7	*	*	7	5.6
Maternal Safety Hazards	19	11.9	5	14.7	14	11.2
Transportation						
Owns Car	73	45.9	21	61.8	52	41.6
Relies on Friends/Family	43	27.0	*	*	39	31.2
City Bus	17	10.7	*	*	16	12.8
Financial Assistance						
None	28	17.6	9	26.5	19	15.2
Father of Baby	52	32.7	15	44.1	37	29.6
Family	21	13.2	*	*	18	14.4
Food Stamps	21	13.2	*	*	19	15.2
SSI	9	5.7	0	0.0	9	7.2
Welfare	13	8.2	*	*	11	8.8
WIC	50	31.4	7	20.6	43	34.4
Payment Sources						
Prenatal Care						
Private Insurance	48	30.2	18	52.9	30	24.0
TennCare	84	52.8	13	38.2	71	56.8
Labor and Delivery						
Private Insurance	47	29.6	18	52.9	29	23.2
TennCare	86	54.1	13	38.2	73	58.4

*The number of events is suppressed if it less than 5.

become covert and subtle, and women on the receiving end of such treatment have nowhere to turn for recourse, and often find themselves unemployed. When coupled with a limited public transportation system that can provide more stress than convenience, and a TennCare system that is complex and difficult to navigate, it is easy to see how economic challenges can quickly become a major stressor for pregnant women.

Recommendations:

A.1 Review public transportation services in the community. Services appear to be inadequate in poorer areas of the county where the services are most needed. Develop a partnership with the Metro Transportation Authority as part of this project.

A.2 Explore ways to make TennCare more user-friendly and less confusing to patients trying to navigate the system.

A.3 Review current laws and policies designed to protect pregnant women in the workplace to see if they can be improved. Look at laws and policies in other localities that are considered to be "pregnancy and family friendly" and use them as models.

A.4 Investigate loopholes in the current law that prevents businesses from firing pregnant women because of their pregnancy. Discover how businesses are getting around the law and modify current laws to fill the gaps.

B. Social and Life Course Challenges

Mothers in the non-reference group were more likely to rely on support from family (Non-ref: 70.4%; Ref: 55.9%) than from the father of the baby (Non-ref: 65.6%; Ref: 82.4%), or their preferred religious institution (Non-ref: 11.2%; Ref: 17.6%) compared to mothers in the reference group (See Table 4). The proportion of mothers that gain social support from friends was roughly equivalent between the two groups.

Mothers in the non-reference group were more likely to have experienced issues during childhood (Non-ref: 29.6%; Ref: 20.6%), including violence. They were also more likely to have experienced current abuse than mothers in the reference group.

Although no one in the cohort was denied care as a result of cultural issues, 28% of mothers in the non-reference group did experience some form of cultural issue during their care. The most frequent form of cultural issue was a language barrier.

Table 4. Social and Life Course Challenges of the FIMR Cohort, Reference and Non-Reference Groups						
	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Life Course Issues During Childhood	44	27.7	7	20.6	37	29.6
Social Support						
Religious institution	20	12.6	6	17.6	14	11.2
Family	107	67.3	19	55.9	88	70.4
Father of Baby	110	69.2	28	82.4	82	65.6
Friends	54	34.0	12	35.3	42	33.6
Social Work	30	18.9	7	20.6	23	18.4
Negative Influence from FOB	22	13.8	*	*	18	14.4
Negative Influence from Family	8	5.0	*	*	6	4.8
Cultural Issues						
No Issues	95	59.7	25	73.5	70	56.0
Beliefs interfere with care	9	5.7	*	*	7	5.6
Cultural Dictates role of father	7	4.4	*	*	5	4.0
Denied care	0	0.0	0	0.0	0	0.0
Language barrier	27	17.0	*	*	23	18.4
Exposure to Violence						
None	69	43.4	19	55.9	50	40.0
Mom abused by previous partner	12	7.5	*	*	9	7.2
Maternal history of rape	13	8.2	*	*	10	8.0
Mom abused as a child	16	10.1	*	*	13	10.4
Mom abused by partner	11	6.9	*	*	10	8.0
Compliance Issues						
Reading difficulty	21	13.2	*	*	17	13.6
Difficulty understanding instructions	16	10.1	*	*	15	12.0
Non-compliant with plan of care	13	8.2	*	*	11	8.8

*The number of events is suppressed if it less than 5.

It is important to note that foreign language was not the only form of communication barrier. Nearly 14% of mothers in the non-reference group had difficulty reading, and 12% had difficulty understanding oral instructions.

Review Team Notes

The current mantra in maternal and child health is “Healthy Women have Healthy Babies”, but for many women in Davidson County, social and medical ills started at an early age. Resources are limited, and for women with communication issues, access to those needed resources is an extremely difficult undertaking. The review team believes a community-wide focus on domestic violence, rape prevention, and adult literacy would greatly impact the lives of pregnant women in Davidson County most at risk of poor birth outcomes.

Recommendations:

B.1 Evaluate screening procedures for domestic abuse and the availability of domestic abuse services in the community. Determine whether there are adequate services for both adults and young women.

B.2 Create a campaign, or partner with an organization that has a campaign, that promotes rape awareness in the community. Also provide training to health professionals to ensure there are trauma-sensitive services in the community.

B.3 Recruit a representative from a literacy group to the Community Action Team; emphasize the literacy-health connection.

B.4 Recruit representatives of rape survivor advocacy groups and domestic violence prevention organizations onto the Action Team.

B.5 Create a decision-tree for foreign-born women who enter TennCare, to ensure they are referred to appropriate services in order to combat the difficulty these women have adjusting to life in a new country while pregnant.

C. Medical and Health Challenges

Nearly 85% of the FIMR cohort had some type of pre-existing medical condition, and there is little difference between the reference and non-reference groups (Cohort: 84.9%; Ref: 82.4%; Non-ref: 85.6%).

Differences between the groups become evident when examining the distributions of specific medical conditions (See Table 5). Mothers in the non-reference group had

Table 5. Medical and Health Challenges of the FIMR Cohort, Reference and Non-Reference Groups

	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Pre-existing medical conditions	135	84.9	28	82.4	107	85.6
Allergies	46	28.9	10	29.4	36	28.8
Anemia	13	8.2	*	*	11	8.8
Cancer	13	8.2	*	*	12	9.6
Chronic respiratory illness	28	17.6	7	20.6	21	16.8
Diabetes	33	20.8	*	*	29	23.2
Gynecological issues	68	42.8	12	35.3	56	44.8
Heart disease	15	9.4	*	*	12	9.6
Chronic hypertension	42	26.4	5	14.7	37	29.6
Mental health issues	33	20.8	8	23.5	25	20.0
Musculoskeletal issues	25	15.7	*	*	21	16.8
Neurological issues	23	14.5	7	20.6	16	12.8
Sickle cell	10	6.3	0	0.0	10	8.0
Urinary tract infections	18	11.3	*	*	15	12.0

*The number of events is suppressed if it less than 5.

higher proportions of gynecological issues (Non-ref: 44.8%; Ref: 35.3%), chronic hypertension (Non-ref: 29.6%; Ref: 14.7%), and diabetes (Non-ref: 23.2%; Ref: Suppressed). Mothers in the reference group experienced higher proportions of chronic respiratory illnesses (Ref: 20.6%; Non-ref: 16.8%), neurological issues (Ref: 20.6%; Non-ref: 12.8%), and mental health issues (Ref: 23.5%; Non-ref: 20.0%).

The two groups exhibited similar proportions of mothers who suffered from allergies (Ref: 29.4%; Non-ref: 28.8%).

Review Team Notes

Most of the mothers in Davidson County who experience fetal or infant losses have other medical concerns in addition to pregnancy, and many of these conditions can negatively impact pregnancy outcomes. Management of chronic conditions is difficult for mothers already facing economic and social challenges, and some feel uncomfortable asking questions of their provider. Many of these women are also coping with mental health issues that are often untreated.

Recommendations:

C.1 Partner with mental health services in Davidson County to connect mental health case management services with other available services (i.e. home visiting) in instances where mental health clients are pregnant in order to provide the mother with greater support, especially where the pregnant mother ceases to take mental health medication for the duration of her pregnancy.

C.2 Home visiting programs want prenatal clients; improve referral services to get more women into home visiting programs during the prenatal period.

C.3 Create a campaign designed to educate the public regarding patient rights, i.e., have a right to ask questions and participate in the design of care plans.

C.4 Create and distribute messaging that reinforces the notion that mothers should report any changes in their health while pregnant to their provider as soon as possible. Find ways to conquer the idea that reporting illness to the provider is somehow "bothering" the physician.

D. Obstetrical History

In addition to chronic conditions, many women must also contend with reproductive issues as well. Table 6 shows the distribution of obstetrical issues within the FIMR cohort. The non-reference group had higher percentages of all the conditions listed. Mothers in that group were more likely to have experienced a fetal or infant loss, given birth to a previous low birth weight infant, and have a previous preterm infant.

Table 6. Obstetrical History of the FIMR Cohort, Reference and Non-Reference Groups

	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Fetal or Infant loss	20	12.6	*	*	17	13.6
Gestational diabetes	11	6.9	*	*	10	8.0
Incompetent cervix	8	5.0	*	*	6	4.8
Infertility	10	6.3	*	*	6	4.8
Previous LBW infant	10	6.3	*	*	9	7.2
Preeclampsia	9	5.7	*	*	7	5.6
Previous preterm	23	14.5	0	0.0	23	18.4

*The number of events is suppressed if it less than 5.

Review Team Notes

Mothers in Davidson County with previous poor pregnancy outcomes or complications are at higher risk for subsequent poor outcomes. Often, the risk of subsequent loss is either not adequately communicated, or is not heard and understood by the client. Even when the risk is adequately communicated, the mother might not be able to act on the instruction due to other challenges in her life. The end result is that by the time she is pregnant again, nothing has changed in her life or her health. Additionally, there are great emotional and social support needs for women experiencing a loss, whether it be grief support or assistance planning memorials. Healthy grieving can reduce challenges for future pregnancies.

Recommendations:

D.1 Work with funeral homes and hospital bereavement teams to create a resource guide that lists all funeral homes in the area that offer free cremation services for infants and fetuses and under what circumstances. Also engage crematoriums in the area to see what services are available for parents who deal with the crematorium directly.

D.2 Expand the availability of home visiting programs to include the post-partum period after a fetal or infant loss in order to discuss mental health needs, family planning, and referrals to

other services. Ideally, all women in the county who have lost an infant should receive at least one home visit.

D.3 Support or create a broad-based educational campaign regarding the signs and symptoms of preterm labor and when it is necessary to call the doctor.

D.4 Start a mass public campaign that promotes keeping track of fetal movement during pregnancy and what to do if movement decreases.

E. Family Planning, Prenatal Care, BMI, and Weight Gain

Table 7. Family Planning, Prenatal Care, BMI, and Weight Gain of the FIMR Cohort, Reference, and Non-Reference Groups

	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Gravida						
First pregnancy	58	36.5	19	55.9	39	31.2
Second	40	25.2	7	20.6	33	26.4
Third	23	14.5	*	*	19	15.2
Fourth or higher	38	23.9	*	*	34	27.2
Intendedness						
Planned	35	22.0	15	44.1	20	16.0
Unplanned	55	34.6	7	20.6	48	38.4
Undesired	13	8.2	*	*	12	9.6
Prenatal Care						
No prenatal care	11	6.9	*	*	10	8.0
First trimester	88	55.3	25	73.5	63	50.4
Late prenatal care (after 13th week)	42	26.4	6	17.6	36	28.8
Missed appointments and not rescheduled	16	10.1	0	0.0	16	12.8
BMI rank						
Underweight	15	9.4	*	*	11	8.8
Normal	41	25.8	13	38.2	28	22.4
Overweight	19	11.9	*	*	17	13.6
Obese	57	35.8	12	35.3	45	36.0
Weight Gain						
Inadequate	32	20.1	6	17.6	26	20.8
Adequate	25	15.7	7	20.6	18	14.4
Excessive	34	21.4	9	26.5	25	20.0

*The number of events is suppressed if it less than 5.

Mothers in the reference group were more likely to have a planned pregnancy than mothers in the non-reference group (Ref: 44.1%; Non-ref: 16%), but the number of planned pregnancies for either group was well below the US average of 50% (See Table 7). Similarly, mothers in the reference group were 46% more likely to start care in the first trimester (Ref: 73.5%; Non-ref: 50.4%).

Forty-eight percent of the entire FIMR cohort was overweight or obese at the time of the pregnancy. Women in the non-reference group were more likely to be underweight or overweight than women in the reference group. However, women in the reference group were 32.5% more likely to gain an excessive amount of weight during

pregnancy than women in the non-reference group. Mothers in the non-reference group were 18% more likely to gain an inadequate amount of weight during pregnancy. Women with an underweight pre-pregnancy BMI, or those who do not gain enough weight during pregnancy are at higher risk of delivering low birthweight and preterm infants. Women with higher BMIs are at risk for gestational diabetes, pre-eclampsia, and birth defects.

Review Team Notes

Mothers can experience a wide-range of barriers to entering prenatal care early that are the result of systems failure as opposed to her own determination. Getting an appointment with a provider that will accept a new patient and schedule the first visit before the first trimester has passed is a test of perseverance, as is navigating the necessary channels to acquire insurance. Additionally, public health has done a poor job of selling the value of prenatal care to the public, and mothers who have had previous successful pregnancies may not see any reason to seek early medical care.

Recommendations:

E.1 Assess current healthy weight initiatives in Davidson County to determine if they are meeting the needs of preconception women. If not, find partners and create a broad-based initiative.

E.2 Investigate the amount of time it takes for pregnant women to get in to see a physician for a first time visit. If there is a significant amount of lag time, explore ways to reduce the time it takes for women to get in for their first prenatal care visit. Specifically, partner with TennCare to address the issues associated with the gap in presumptive eligibility and insurance coverage that prevents women from receiving timely prenatal care.

E.3 Design and implement a public awareness campaign designed to inform mothers of the value of prenatal care from the clients' perspective.

E.4 Create a pilot program that offers group prenatal care in conjunction with the WIC program.

F. Substance Abuse Challenges

Approximately 68% of women in the cohort had no issues with substance abuse during pregnancy (See Table 8). This holds true for mothers in both the reference and non-reference

groups. Mothers in the reference group tended to use tobacco (Ref: 32.4%; Non-ref: 20.8%) and alcohol (Ref: 14.7%; Non-ref: 8.8%) more frequently than mothers in the non-reference group. Conversely, mothers in the non-reference group used cocaine, marijuana, and other drugs more frequently than the reference group.

Table 8. Substance Abuse Challenges of the FIMR Cohort, Reference Group, and Non-Reference Groups

	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
No Issues	108	67.9	23	67.6	85	68.0
Tobacco Use	37	23.3	11	32.4	26	20.8
Alcohol Use	16	10.1	5	14.7	11	8.8
Cocaine	9	5.7	*	*	8	6.4
Marijuana	19	11.9	*	*	17	13.6
OTC and Prescription Drugs	7	4.4	*	*	5	4.0
Other drugs	10	6.3	*	*	9	7.2

*The number of events is suppressed if it less than 5.

Review Team Notes

There is a growing concern among many different sectors and institutions regarding substance abuse in pregnant women. Mothers who are actively using potentially dangerous substances are reluctant to seek help due to the possible consequences, and providers are reluctant to address this issue due to the lack of services and the possible ramifications of referral. No solution to this wide-reaching issue can be constructed by one group or institution; questions of detection, timing of intervention, and the best plan of care have far-reaching implications for the depth and breadth of the public and private sectors.

Recommendations:

F.1 Partner with Smoke Free Nashville and labor and delivery centers in hospitals to create and provide a pledge to new parents that they will provide smoke free homes for their infants.

F.2 Create a forum for all providers and agencies that provide services to pregnant women that allows an open and frank discussion about substance use in pregnant women; how and when to screen, what policies and practices exist and identify where the gaps are, what the responsibility of public agencies should be, and what consequences there are or should be.

F.3 Evaluate the drug rehab resources available in Davidson County to determine if they are adequate to meet the need, especially concerning pregnant women.

G. Conditions Experienced During Pregnancy

Table 9 displays a selected list of conditions that developed during the reviewed pregnancy, as opposed to Tables 5 and 6, which presented data on the maternal medical and obstetric history. Over 41% of all mothers in the cohort experienced some type of emotional stressor during pregnancy; the difference in the proportion between the two groups is less than 9%. Mothers in the reference group were more likely to experience a loss of fetal activity or preterm labor compared to the non-reference group, while mothers in the non-reference group experienced higher proportions of infections of all types.

Table 9. Conditions Experienced During Pregnancy of the FIMR Cohort, Reference, and Non-Reference Groups

	Cohort (n=159)		Reference (n=34)		Non-Reference (n=125)	
	n	%	n	%	n	%
Anemia	14	8.8	*	*	13	10.4
Chorioamnionitis	21	13.2	*	*	18	14.4
Emotional Stressors	65	40.9	13	38.2	52	41.6
Infection	43	27.0	5	14.7	38	30.4
Sexually Transmitted infections	17	10.7	*	*	17	13.6
Urinary Tract infections	22	13.8	*	*	20	16.0
Gestational Diabetes	12	7.5	*	*	11	8.8
Pregnancy-induced hypertension	9	5.7	*	*	7	5.6
Incompetent cervix	16	10.1	*	*	14	11.2
Loss of fetal activity	20	12.6	5	14.7	15	12.0
Preterm Labor	56	35.2	14	41.2	42	33.6

*The number of events is suppressed if it less than 5.

Review Team Notes

There is a growing need to address stress and its emotional and physiological effects during pregnancy. Clients are often unable to communicate the stress in their lives or how that stress affects their health, and providers do not have the time, the tools, or access to the community

resources needed to screen for stress and refer for assistance during routine visits. In addition, available services in the community are often limited and disjointed.

Recommendations:

G.1 Provide literature and training for obstetric and clinic providers on identifying stress in pregnant women and following up with mental health referrals.

G.2 Find ways to encourage post-partum women to seek regular medical care, especially when they experienced diabetes or hypertension during pregnancy. Risks of developing those diseases after pregnancy need to be adequately communicated.

G.3 Evaluate screening and treatment protocols in Davidson County for detecting, diagnosing, and treating depression in pregnant women.

H. Special Note: Safe Sleep

Quantitative data on infant deaths related to unsafe sleeping environments is best gleaned from the report of the Child Death Review Team (See http://health.nashville.gov/PDFs/HealthData/CDR2010.pdf). Although FIMR does not review all deaths due to unsafe sleep, the team is still able to highlight issues that may not appear in quantitative analysis.

Although the message about safe sleep is given to new parents at the hospital, this does not encompass all of the people who might at some point provide care to that infant. The number of sleep-related deaths and the circumstances surrounding them indicate that the safe sleep message is not being adequately communicated.

Recommendations:

H.1 Expand safe sleep education to all people who might be a transient caregiver; emphasize in parent and grandparent education that they should "pass the word along" about safe sleep to **anyone** who is caring for their infant.

H.2 In cases of death in unsafe sleeping environments, ensure that parents understand the death was preventable.

H.3 Find ways to address the generational gap in Back to Sleep education, and education on the dangers of co-sleeping and unsafe sleeping environments.

H.4 Emphasize that any kind of impairment while co-sleeping is extremely dangerous for the infant.

FIMR Projects

Reviews of infant and fetal deaths are conducted to determine what systems changes can be made to prevent future loss. This goal is realized through the efforts of the Community Action Team (CAT). The CAT reviews, prioritizes, and operationalizes the recommendations made by the Review Team.

The following pages detail the projects, past and present, that the committee has thus far addressed. Anyone who desires to participate in the Action Team or on a specific workgroup is encouraged to contact the FIMR Director, Carolyn Riviere at carolyn.riviere@nashville.gov.

FIMR Project 1

Project Name:	**Obstetrical and Neonatal Transfer Guidelines**
Recommendation:	Work with area regional centers and high risk hospitals, first responders and EMS to identify and/or establish guidelines and protocols regarding how non-birthing hospitals stabilize and transfer pregnant women in emergency situations.
Status:	**Completed**
Summary:	It has been verified that all non-delivery hospitals in Davidson County have protocols in place for transferring pregnant women in emergency situations. Additionally, all non-delivery hospitals have provided the Nashville Fire Department (NFD) with a written letter advising that they cannot manage a pregnant patient so that Emergency Medical Service (EMS) personnel will not transport a patient with a pregnancy-related problem to those hospitals. Though the work of this subgroup has ensured that any woman with emergency complications of pregnancy will be transported to a hospital with appropriate facilities, the Review Team has indicated that it might be necessary to revisit the issue.

FIMR Project 2

Project Name:	**Availability of Home Visiting to a Postpartum client after a Fetal or Infant Loss**
Recommendation:	Expand the availability of home visiting programs during the postpartum period after a fetal or infant death. Discuss mental health needs and referrals.
Status:	**Currently on HOLD**
Summary:	While great support from the birthing hospitals and community agencies who visit postpartum women was indicated, this project has been placed on hold until the desirability of a home visit by the patient has been determined. (See Project 15)

FIMR Project 3

Project name: **Central Referral**

Recommendation: Explore the possibility of expanding the Central Referral Program at Metro Health Department.

Status: **Currently on HOLD**

Summary: Metro Central Referral currently serves as a referral hub. Providers make one referral for a patient and the staff at Central Referral reviews the case and connects the patient with the programs that best fit the patient's needs. An expansion of these services is currently on hold until a full review of the HIPAA regulations can be conducted.

FIMR Projects 4 & 5

Project Name: **Bereavement and Communication After a Fetal or Infant Loss**

Recommendations: Project 4 Provide a brochure for area hospitals that includes comprehensive bereavement service information and information on burial services.

Project 5 Establish a protocol to work with birthing hospitals to prevent mothers from being lost to contact after a fetal or infant loss.

Status: **Completed**

Summary: After establishing partnerships with the delivery hospitals in Davidson County, informational brochures were provided for distribution. Additionally, a resource guide was compiled by a MPHD summer extern in 2010 after collaborating with the hospitals.

To improve case finding for FIMR and to avoid high rates of loss to follow -up, a confidential phone line was established for the notification of fetal or infant deaths. The intent is for FIMR to receive early notification of a fetal or infant death to increase the opportunity for a maternal interview. The process for the contact initiation is, first, a sympathy card and then, at a later date, a letter inviting the client to participate in an interview where she will be given time to share her story.

FIMR Project 6

Project Name: **Prenatal Diary**

Recommendation: Develop a diary for pregnant women that would include information from prenatal care visits and information about the preferred delivery hospital. There are existing diaries available. Give diaries to providers to give to their patients and possibly use as an incentive.

Status: **In progress**

Summary: This project is being conducted collaboratively with the health department in Chattanooga, and has also been presented to the TennCare Maternity Collaborative Committee with favorable results. In Davidson County, the diary design has been completed and approved, and plans are being made with a local obstetrician to pilot use of the diary in multiple clinics. Current issues to be resolved before launch include funding for printing, and determining if there is a need for approval from an Institutional Review Board.

FIMR Project 7

Project Name: **Linkages**

Recommendation: Create linkages in service between clinics and other community partners to access information and prevent possible gaps in service of patients.

Project Status: **In progress**

Summary: This project is designed to cultivate networking and partnerships between the different medical and social systems that service pregnant women. The committee is currently collaborating with Meharry Medical College in order to conduct eight focus groups to investigate needs and gaps in services during pregnancy from the perspective of pregnant women. The project has gained IRB approval and is moving into the recruitment phase of the program.

FIMR Project 8

Project Name: **Mental Health**

Recommendation: Evaluate availability of mental health services in the county and protocols for screening for postpartum depression. Include assessment of the campaign 'It's OK to Ask for Help'.

Project Status: **In progress**

Summary: The committee has identified three target groups: faith communities, funeral homes, and hospital chaplains. Initial efforts focused on hospital chaplains. Key constituents from the birthing hospitals were invited to a meeting to learn more about the issue and provide information regarding the needs they see through their daily interactions with families that have experienced a fetal or infant loss. Based on the information provided, a survey was developed; the plan is to distribute the survey to all hospital bereavement providers to gauge the depth of unmet need. The results will guide the development of resources which will be presented to the faith-based community to improve the provision of emotional support to those families who have experienced a fetal or infant loss.

FIMR Project 9

Project Name: **Safe Sleep**

Recommendation: Find creative ways to address the generational gap in Back to Sleep education. Provide education on the dangers of co-sleeping and unsafe sleeping environments. (Committee addresses multiple recommendations from the Infant Safety section of Appendix A).

Project Status: **In progress**

Summary: The committee has prepared a position statement regarding Safe Sleep which has been approved for dissemination by the Metro Public Health Department. A resolution for Safe Sleep Day has been approved by the Metro Council, and t-shirts for nurses with the ABC (Alone, Back, Crib) message will be distributed to birthing hospitals in Davidson County to be worn on September 21, 2012. Additionally, a Safe Sleep girl scout patch is being proposed to the Girl Scout Administration. Continuing

education credits have been approved for classes taught to day care staff in Davidson County, and Pack 'N Plays® are distributed as available to families of newborns who do not have a safe place for the baby to sleep.

FIMR Project 10

Project Name: **Preterm Labor**

Recommendation: Produce public service announcements that educate women on how to recognize the signs and symptoms of preterm labor.

Project Status: **In progress**

Summary: An educational video has been produced through a collaboration with Luvric & Company, the Nashville State P.E.G. Studio, and the March of Dimes of Middle Tennessee. The panel was composed of a local obstetrician, a nurse from the Vanderbilt Department of OB/GYN, and the 2010 March of Dimes Ambassador Mom. The program will be aired on Channel 19, and copies of the DVD will be distributed to local agencies and providers.

FIMR Project 11

Project Name: **Introduction of FIMR into school curriculum**

Recommendation: Work with nursing schools to introduce FIMR into the curriculum

Project Status: **Completed**

Summary: A series of meetings were held with the faculty of several nursing schools in the area to introduce FIMR and explore opportunities for collaboration. One nursing school gave the list of CRT recommendations to students in the summer session with the directive to find a community agency to meet each identified need or gap in service. As part of the project, the students compiled a list of these community agencies for future use.

FIMR Project 12

Project Name: **Dangers of Second and Third Hand Smoke**

Recommendation: Provide in-services for day care staff to which parents are also invited. The in-service should discuss the dangers of second and third hand smoke exposure for infants.

Project Status: **Completed**

Summary: This project was conducted by a summer extern in the Meharry Master of Science in Public Health program. The goals of this study were to increase awareness among day care staff and parents regarding the effects of second and third hand smoke on infants, and to improve infant health by decreasing exposure to secondhand smoke in day cares, homes, and vehicles. A survey was conducted via telephone with all day cares in the area to assess the smoking policy at each facility, and determine the availability of continuing education for employees and parents.

FIMR Project 13

Project Name: **Reproductive Health Curriculum**

Recommendation: Seek to provide standardization of the reproductive health curriculum provided to students in a resource class.

Project Status: **Completed**

Summary: This project was conducted by a summer extern enrolled in the Meharry MSPH program. The extern designed a program to teach a prepared curriculum to middle school girls. Knowledge gained was measured via pre and post test.

FIMR Project 14

Project Name: **Barriers to Prenatal Care**

Recommendation: Investigate the amount of time it takes for pregnant women to get in to see a physician for a first time visit. If there is a significant amount of lag time, explore ways to reduce the time it takes women to get in for their first prenatal care visit. Specifically, partner with TennCare to address the issues associated with the gap in presumptive eligibility and insurance coverage that prevents women from receiving timely prenatal care.

Project Status: **In progress**

Summary: This project is a collaborative effort between the Music City Healthy Start program and FIMR. The intent is to identify barriers to prenatal care from the process of obtaining insurance and making the first prenatal appointment through the completion of the pregnancy. This project aims to investigate both the perspective of the client and the perspective of the provider.

FIMR Project 15

Project Name: **Post-Loss Visit**

Recommendation: Assess the need for a Post loss visit.

Project Status: **In progress**

Summary: This committee is working to identify research that shows benefits from a post-loss visit to a mother and her family. A literature search has been completed, and inquiries have been made to the National FIMR office. Additional questions have been added to the FIMR maternal interview as well, trying to determine if post-loss visits would be welcome. Once the data collection is complete and analyzed, the results will be shared with the committee members of Project 2.

Conclusions

Fetal and infant mortality are important indicators of the health status and well-being of a community, and Davidson County continues to experience high rates of infant and fetal death along with considerable disparity between groups. The case finding of the Fetal and Infant Mortality Review program provides valuable insight into individual experiences with systems of care, and factors that contribute to fetal and infant mortality. These findings and the recommendations resulting from them can inform community-based efforts, provider practice, systems reform, and policy development.

The Community Action Team is working diligently towards transforming the recommendations into action through the pursuit of community projects. The concentrated effort of these individuals, communities, and organizations will improve the delivery of services and systems of care for women, infants, and families in Davidson County.

Appendix A

Listed below is an exhaustive list of the CRT recommendations through the end of June 2012. Recommendations have been divided into areas of need for organizational purposes. The areas of need are: post-loss care, mental health, preconception and interconception care, substance abuse, medical and social systems, the FIMR process, prenatal care, family planning, domestic abuse, infant safety, environmental issues, and advocacy, policy, and law.

Area of Need: Post-Loss Care

1. Expand the availability of home visiting programs to include the postpartum period after a fetal or infant loss. Discuss mental health needs, family planning, and referrals to other services. Ideally, all women in the county who have lost an infant should receive at least one home visit.

2. Explore the possibility of expanding the Central Referral Program at Metro Health Department.

3. Create and provide a brochure for area hospitals that provides comprehensive bereavement information and also includes burial information.

4. Establish a protocol to work with Birthing Hospitals that prevents mothers from being lost to contact after a fetal or infant loss. Identify Bereavement Programs at the birthing hospitals for better communication and collaboration.

5. Assess if current bereavement services are equipped to serve people with special needs.

6. Determine how parents are provided the results of an autopsy on their child when Mother is not under the regular care of a physician. Does the Medical Examiner's office have an individual trained to interface with grieving parents while explaining the results of an autopsy? Evidence indicates it is difficult for parents to get the results.

7. When a mother is brought in to deliver a loss (stillborn, TOP), a nurse should be assigned to that mother to stay with that patient throughout the process. The nurse can help alleviate the trauma and help the patients begin the bereavement process. This is particularly important if Cytotec is going to be administered.

8. Ensure that grief services provide support to the entire family (i.e. siblings), in addition to the parents.

9. Investigate autopsy practices at area hospitals and associated costs to patients. Explore ways to reduce costs to the family.

10. Improve communication with patients regarding autopsies – i.e. what to expect from an autopsy, when to expect the results, who to call to get the results, resources to help a patient understand the results.

11. Establish a dialog with the funeral director association in order to discuss issues in the system including those that result in infants being held "hostage" by the funeral home when parents do not have money to pay for burial services. Also discuss protocols and procedures when mistakes are made in the distribution of ashes.

12. Work with funeral homes and hospital bereavement teams to create a resource guide that lists all funeral homes in the area that offer free cremation services for infants and fetuses and under what circumstances. Also engage crematoriums in the area to see what services are available for parents who deal with the crematorium directly.

13. Evaluate hospital procedures and protocols for handling women with pregnancy losses, i.e. many report being discouraged by remaining on a floor where healthy babies are delivered and hearing happy families and infants. Determine if policies are in place at all delivery hospitals to move women with losses to a different floor.

14. Ensure funeral homes clearly explain that a "free burial" may include charges from the cemetery, and reveal the amount of those charges upfront. Also couple this with an explanation of cremation services and that these services may be truly free.

Area of Need: Mental Health

1. Provide literature and training for obstetric and clinic providers on identifying stress in pregnant women and following up with mental health referrals.

2. Evaluate availability of mental health services in the county and protocols for screening for postpartum depression. Include assessment of the campaign 'It's OK to Ask For Help'.

3. Develop a line of communication between mental health providers and obstetrics in cases where the mother has extensive mental health issues.

4. Assess and ensure culturally appropriate mental health services are available.

5. Evaluate screening and treatment protocols in Davidson County for detecting, diagnosing, and treating depression in pregnant women.

6. Partner with the Mental Health Co-op/Centerstone to connect mental health case management services with other available services (i.e. home visiting) in instances where mental health clients are pregnant in order to provide the mother with greater support, especially where the pregnant mother ceases to take mental health medication for the duration of her pregnancy.

Area of Need: Preconception and Interconception Care

1. Create and implement public health messaging that draws attention to preconception and interconception health. The earlier the messaging begins the better.

2. Determine if there is a state or national benchmark for obesity in pregnant women. The home interviewer has stated that moms do not see themselves as fat but pregnant, and that they are supposed to look as they do. Nurses and hospitals are good about asking moms for their pre-pregnancy weights.

3. Assess current healthy weight initiatives in Davidson County to determine if they are meeting the needs of preconception women. If not, find partners and create a broad-based initiative.

4. Find ways to encourage women who are demonstrating self-advocacy about their lives to develop a reproductive life plan. Explain that taking charge of their reproductive life is just as important as taking control of the other areas of their life.

5. Find ways to encourage post-partum women to seek regular medical care, especially when they experienced diabetes or hypertension during pregnancy. Risks of developing those diseases after pregnancy need to be adequately communicated.

6. Include discussions with patients about the added benefits of using condoms for disease prevention.

7. Incorporate self-esteem and empowerment curriculums into nutritional health programs aimed at youth.

8. Ensure that the folic acid message is adequately distributed and communicated among the Spanish-speaking communities in Davidson County.

9. Partner with education to identify young people with truancy issues in order to refer/enroll those youth in self-esteem building programs such as Journeys.

10. Research whether or not Davidson County has programs that work with children with special needs as they transition to adults in order to train them in life skills and also educate their caretakers on issues they might face as the child grows into an adult. If no such program exists, then create one.

Area of Need: Substance Abuse

1. Assess the current practices of screening for substance abuse, the availability of cessation services in the community, and whether or not appropriate referrals are being made.

2. Ensure smoking cessation programs offered to pregnant women encompass the entire household.

3. Partner with Smoke Free Nashville and labor and delivery centers in hospitals to create and provide a pledge to new parents that they will provide smoke free homes for their infants.

4. Provide in-services for day care staff to which parents are also invited that discuss the dangers of second and third hand smoke exposure for infants.

5. Create a forum for all providers and agencies that provide services to pregnant women that allows an open and frank discussion about substance use in pregnant women; how and when to screen, what policies and practices exist and identify where the gaps are, what the responsibility of public agencies should be, and what consequences there are or should be.

6. Evaluate the drug rehab resources available in Davidson County to determine if they are adequate to meet the need, especially concerning pregnant women.

7. Investigate harm reduction programs for drug users in Davidson County (if any). If there are none evaluate the feasibility of starting a program and including contraception as part of its mission.

Area of Need: Medical and Social Systems

1. Work with area regional centers and high risk hospitals, first responders and EMS to identify and/or establish guidelines and protocols regarding how non-birthing hospitals stabilize and transfer pregnant women in emergency situations.

2. Reach out to clinics serving non-English speaking populations to ensure a continuum of care and adequate interpretation services.

3. Create linkages in services between clinics and other community partners to access information and prevent possible gaps in the service of patients.

4. Assess current staff sensitivity training practices and curriculum among agencies that provide social services. A need to avoid "talking down" to people petitioning for assistance has been identified.

5. Assess availability of services provided to incarcerated women (substance abuse, mental health, reproductive health, family planning, etc) and to women who are just released from jail.

6. Assess the food services provided to incarcerated women; determine policies for adjustment of nutrient intake for women with specific medical conditions including diabetes and pregnancy.

7. Develop a set of standard maternity protocols to be followed at discharge even if mother has been transferred to another floor after a loss to improve the accuracy and quality of medical records.

8. Explore the possibility of developing a mechanism for connecting homeless persons to medical homes and home visiting services even if those services have to be offered on-site at the clinics.

9. Home visiting programs want prenatal clients; improve referral services to get more women into home visiting programs during the prenatal period.

10. Ensure cultural sensitivity when offering genetic testing to a mother, taking into account that in some countries it is an accepted practice for the mother to be related to her spouse.

11. Create a decision-tree for foreign-born women who enter TennCare to ensure she is referred to appropriate services in order to combat the difficulty these women have to adjusting to life in a new country while pregnant.

12. Make inroads into the Muslim community to see how best to help improve the care members of this growing segment of our population receive.

13. Encourage MCO's to administer patient satisfaction surveys and drop providers from the roster that consistently receive poor reports.

14. Evaluate refugee resettlement programs in the area as a form of quality assurance. Are the services that are offered actually delivered? Are resettled families receiving adequate support to adjust to a new culture? Provide results of evaluation back to agencies involved in resettlement as a form of quality assurance.

15. Partner with TennCare transportation to develop a policy/protocol/practice that enables drivers to get destination instructions from some other source when the client is a non-English speaker and unable to communicate the destination themselves.

16. Either create or support responsible fatherhood programs in the community.

17. Evaluate the policies and procedures of TennCare transportation to improve services and make those services more palatable to clients.

18. Evaluate organizations that provide services to high needs families to determine if there are support services for staff that interact with these families on a regular basis.

19. Create a community wide public awareness campaign designed to conquer the common perception that infant mortality is an issue of "those people". Promote the idea that infant mortality affects all people, and as such, is a community issue.

20. Explore ways to make TennCare more user-friendly and less confusing to patients trying to navigate the system.

21. Evaluate systemic issues that can create discontinuity in care among international patients.

22. Partner with the Fatherhood program to conduct a series of focus groups designed to elicit information from fathers regarding changes that can be made to the system of care delivery involving pregnancy, infancy, and loss that will make those systems more accessible and acceptable to fathers.

23. Help to inform mothers of childcare options when mothers need to attend an appointment, be hospitalized, or seek in-patient rehabilitation treatment while assuring the mother that she is not turning her child over to the Department of Children's Services (DCS).

24. Investigate the prevalence of abuse in DCS foster care homes.

25. Evaluate EMS protocols for transporting pregnant women, i.e. if the mother reports that her infant has special needs or that the delivery will need special services, does EMS transport to the appropriate hospital, or does it still take the patient to the nearest facility? Is there a difference in operating procedures between Metro and private ambulance services?

26. Investigate the policies of area Emergency Departments (ED) to see what happens when a woman comes in for a reason other than pregnancy and pregnancy is either apparent, or determined during the ED visit. How can the emergency department be used to help provide referrals to needed services for women who otherwise have no contact with the medical system?

Area of Need: FIMR Process

1. Engage the faith-based community in developing public health messaging and include them in the FIMR process.

2. Enlist participation of Schools in the FIMR process (Include high schools and colleges).

3. Work with nursing schools to introduce FIMR into the curriculum.

4. Recruit a representative from a literacy group to the Community Action Team; emphasize the literacy/health connection.

5. Recruit a non-native English speaker to the Case Review Team.

6. Recruit a mother who has experienced a loss to provide a consumer viewpoint on the case review team.

7. Recruit representatives of rape survivor advocacy groups and domestic violence prevention organizations onto the CAT.

8. The FIMR interviewer should leave materials and resource information with the mother at the time of the visit instead of mailing it at a later time.

9. Evaluate EMS protocol with regards to the transportation of parents (especially fathers) in the same ambulance that the distressed infant is being transported.

10. Reformat the FIMR brochure given to parents with a loss to include a note that informs mothers that they can call the FIMR interviewer whenever they are ready to talk - even if some time has passed since the loss.

11. Requisition a metro cell phone for the FIMR interviewer to use as the main FIMR line so that mothers attempting to contact her are not lost in the metro phone system. Will also help with branding FIMR as a community project and not a solely governmental one.

Area of Need: Prenatal Care

1. Develop a Diary for pregnant women that would include information from prenatal care visits and information about the preferred delivery hospital. There are existing diaries available. Give diaries to providers to give to their patients and possibly use as an incentive.

2. Support or create a broad-based educational campaign regarding the signs and symptoms of preterm labor and when it is necessary to call the MD.

3. Create public service announcements that inform women about what a healthy pregnancy is like, and educate about common abnormalities and when to seek immediate care.

4. Find ways to discourage the use of the ER for primary care, and emphasize that ER visits are not the same thing as prenatal care visits.

5. Start a mass public campaign that promotes keeping track of fetal movement during pregnancy and what to do if movement decreases.

6. Create and distribute messaging that reinforces the notion that mothers should report any changes in their health while pregnant to their provider as soon as possible (febrile illness, vomiting, falls, etc). Find ways to conquer the idea that reporting illness to the provider is somehow "bothering" the physician. Perhaps sell the idea that healthcare is a service that the patient pays for, and as such the patient is entitled to demand quality (i.e. getting questions answered, responsiveness, etc.).

7. Partner with and find ways to saturate the community with the Text 4 Baby program.

8. Design and implement a public awareness campaign designed to sell the value of prenatal care from the patient's perspective (what happens in prenatal care visits, why it is important, what is the benefit to the patient – more than prenatal care helps you have a healthy baby). Would also be helpful to make modifications to the campaign and use it to target different cultures. Draw parallel to successful preconception use of folic acid campaign.

9. Encourage birthing centers to offer pregnancy classes that detail what pregnant women can expect, and what do when things go wrong. See if Managed Care Organizations (MCOs) would fund such classes as part of improving pregnancy outcomes initiatives.

10. Institute a pregnancy hotline (211). Alternatively, assist MCOs in promoting already created pregnancy lines.

11. Create a pilot program that offers group/centering prenatal care in conjunction with the WIC program.

12. March of Dimes has a series of Public Service Announcements (PSA) that could be used in waiting rooms of WIC and OB offices. Make use of the resource.

13. Create an intervention for women who are exposed to violence during pregnancy in order to improve outcomes.

14. Educate patients that being put on complete bed rest is a serious matter and not a time to be working and worried about other things.
Review protocols for STD screening in pregnant women; establish a standard that allows for screening of pregnant women and their partners regardless of perceived social status.

15. Investigate the amount of time it takes for pregnant women to get in to see a physician for a first time visit. If there is a significant amount of lag time, explore ways to reduce the time it takes women to get in for their first prenatal care visit. Specifically, partner with TennCare to address the issues associated with the gap in presumptive eligibility and insurance coverage that prevents women from receiving timely prenatal care.

16. Partner with the school system to improve the referral system for pregnant students with truancy issues to get them enrolled in homebound education, and public health programs designed for pregnant teens.

17. Create a list of urgent care clinics with a Certified Nurse Practitioner that is qualified to offer prenatal care in order to help address the gap between presumptive eligibility and enrollment in TennCare or as a source for beginning prenatal care earlier if an appointment with an OB/GYN cannot be scheduled until later in pregnancy due to appointment openings.

18. Work with TennCare to apply a mass vaccination clinic model to TennCare enrollment for pregnant women.

Area of Need: Family Planning

1. Identify barriers to contraception use and identify education programs in the community regarding contraception use and its importance in the pre- and interconception periods.

2. Seek to provide standardization on the reproductive health curriculum provided to students in a resource class. Currently there is no standard curriculum, and there is a lot of variability in the information that is provided.

3. Determine what sort of follow-up is available for women who decline family planning services and contraception at discharge from the hospital, or who deliver at an institution that is prohibited from discussing contraception.

4. Overcome resistance of providers to prescribe long-term contraception to women with

multiple partners in situations where pregnancy presents a greater risk to the mother than the potential of removing an infected device.

5. Promote the use of long-term contraception as a legitimate form of birth control, especially for women with extensive social and mental health issues.

6. Include reproductive health plan information in packets given at post-partum and for bereavement. Involve the MCO's in distributing and promoting the information as a work around for hospitals that are prohibited from discussing family planning with their patients.

7. Include family planning and reproductive health plans in the services provided in the jail system. Offer long-term contraception at discharge.

8. Find creative ways to incorporate reproductive health plans with STD prevention work, and include males.

9. Encourage consideration of long-term contraception and emphasize the extreme importance of not letting the prescription lapse.

10. Find creative ways to combat the myths surrounding birth control, especially among at risk youth.

Area of Need: Domestic Abuse

1. Evaluate screening procedures for domestic abuse and the availability of domestic abuse services in the community. Determine whether there are adequate services for both adults and young women.

2. Create a campaign or partner with an organization that has a campaign that promotes rape awareness in the community. Also provide training to health professionals to ensure there are trauma-sensitive services in the community.

3. Evaluate domestic violence services with regard to emotional abuse treatment, and whether or not the services are accessible and acceptable to men as well as women.

Area of Need: Infant Safety

1. Find creative ways to address the generational gap in Back to Sleep education, and education on the dangers of co-sleeping and unsafe sleeping environments.

2. A great deal of oversight and education, including safe sleep, is provided to foster parents. If the child is placed with a family member (unless the baby is born drug positive), there is no oversight. Review DCS standards and policies with respect to relative caregivers and find creative ways to fill the system gap.

3. Provide training to CPS workers regarding well baby safety, e.g. how to properly install a car seat and safe sleep practices.

4. Explore the possibility of follow-up for relative caregivers through the HMOs.

5. In addition to hospitals and birthing centers providing packets of information to new parents, also provide packets to Grandparents. Make sure the packets include Safe Sleep education materials.

6. Stress that not everyone under every circumstance is a candidate for co-sleeping; discourage the use of co-sleeping apparatus; emphasize that any kind of impairment while co-sleeping is extremely dangerous for the infant.

7. Expand safe sleep education to all people who might be a transient caregiver; emphasize in parent and grandparent education that they should "pass the word along" about safe sleep to anyone who is caring for their infant.

8. In cases of deaths in unsafe sleeping environments, ensure that parents understand the death was preventable.

9. Standardize training in infant CPR protocols to ensure that the training is offered to all parents and caregivers with a newborn.

10. When crafting and providing safe sleep education, ensure that the father is included (where possible).

11. Encourage pediatricians who see infants for sick appointments (especially respiratory conditions) to stress/re-iterate to the parent/caregiver the importance of safe sleep.

Area of Need: Environmental Issues

1. Establish a relationship with the Housing Authority and evaluate the policies and procedures with regards to environmental concerns, especially when pregnant women are involved.

2. Review public transportation in the area. Services appear to be inadequate in poorer areas of the county where the services are most needed. Develop a partnership with Metro Transportation Authority as part of this project.

Area of Need: Advocacy, Policy, and Law

1. Create a campaign designed to educate the public regarding patient's rights, i.e., have a right to ask questions, have a right to participate in the design of care plans, etc.

2. Find ways of promoting business cultures that are supportive of pregnant women in the workplace, i.e. promoting flexibility in work schedules and duties.

3. Investigate loopholes in the current law that prevents businesses from firing pregnant women because of their pregnancy. Discover how businesses are getting around the law and modify current laws to fill the gaps.

4. Review current laws and policies designed to protect pregnant women in the workplace to see if they can be improved. Look at laws and policies in other localities that are considered to be "pregnancy and family friendly" and use them as models.

5. Work to prevent discrimination of pregnant women seeking employment.

6. Create a position statement that clearly delineates FIMR support for movements/projects/organizations that are working to reduce the number of medically unnecessary C-sections performed in Davidson County.

Metro Public Health Dept
Nashville/Davidson County

Report prepared by:
Brook McKelvey, MA, MPH
Burns Rogers, PhD, MPH
Carolyn Riviere, MS, RN, FIMR Director
Pam Taylor
Serena Neumann, RN
Debi Hoffman